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ABSTRACT

This booklet provides a basic introduction to the application of electronic telecommunications networks to the challenge of meeting the nation's education goals. Topics covered include telecommunications networks; the Internet; the Network Center for Education Statistics (NCES) and network technology, including SPEEDE/ExPRESS (Standardization of Postsecondary Education Electronic Data Exchange/Exchange of Permanent Records Electronically for Students and Schools) and INet (Institutional Communications Network); and related NCES initiatives, including the National Cooperative Education Statistics System, the National Data Resource Center, student and staff data handbooks, and the Course Classification System. Sources for further information are listed. (JLB)

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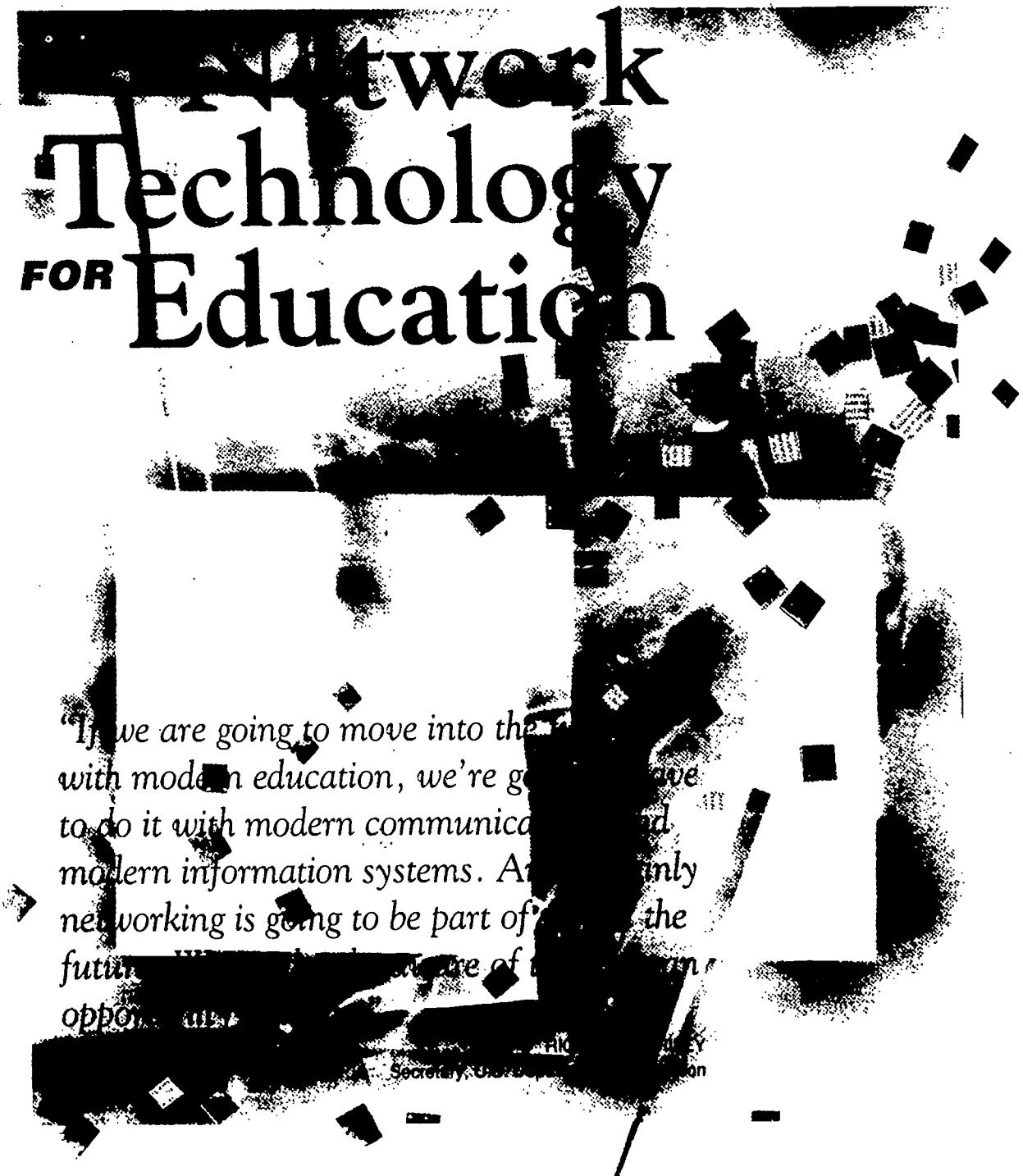
FOR Edu[illegible]ati[illegible]

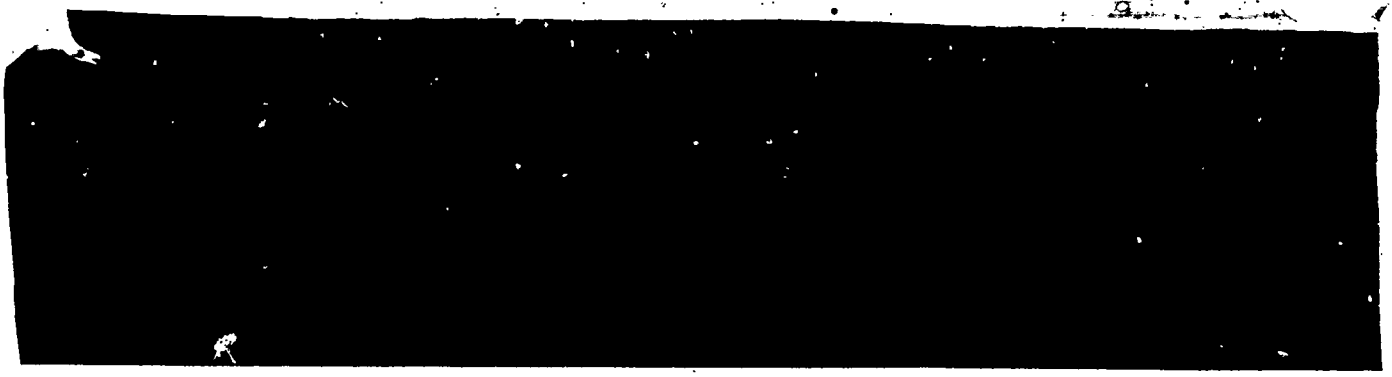
EXPERIENCE THE POWER:

Network Technology FOR Education



"If we are going to move into the ... with modern education, we're g... ve to do it with modern communica... d modern information systems. A... nly networking is going to be part of ... the futu... e of ... n opp...

... Secretary, U.S. ... tion



U.S. Department of Education
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National Center for Education Statistics
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March 1994

Credits

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Foreword

This booklet was first published for the 1993 Summer Forum of the National Cooperative Education Statistics System, whose funding comes from the U.S. Department of Education's National Center for Education Statistics. It was intended as a companion to a video presentation of the same name and, as such, the booklet's initial distribution was limited. Interest in the education applications of the electronic superhighway in general and the telecommunications network activities of the Department in particular have since proven sufficiently high to warrant additional printing and broader distribution. We invite you, the reader, and especially you, the educator, to discover how electronic telecommunications networks can be applied to the challenge of meeting the nation's education goals.

Paul Planchon, Associate Commissioner
Elementary/Secondary Education Statistics Division
National Center for Education Statistics

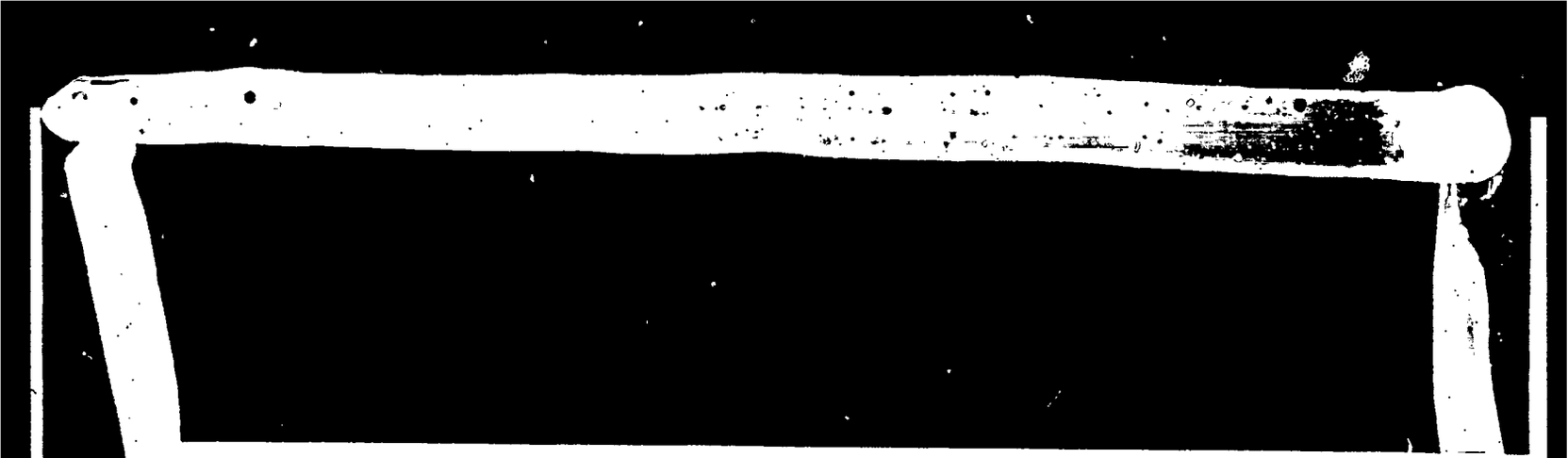
Telecommunications Networks

Telecommunications networks and what they are all about — access to information — have significant implications for education. Networks permit educators to exchange information with speed and ease that could only be wished for a few short years ago. And information and data from libraries, laboratories, government agencies, and universities throughout the world are available for the asking to students and educational practitioners in every state.

It's a new era.

"There are literally hundreds and hundreds of electronic networks that are being used across the country by educators. Some of them are statewide, some of them are local."

LINDA ROBERTS
Special Advisor on Educational Technology
U.S. Department of Education



Internet

Internet is a name you've probably heard. As perhaps the best known telecommunications network, it is used in more than 50 countries around the world and by over 10 million people. But what is it?

Simply put, Internet is a network of networks, some 10,000 of them, and growing steadily. It has its origins in the public sector — federal government computer research, chiefly military — but now functions in the private, commercial sector. While the most common Internet application is still electronic mail, researchers and administrators alike are coming to appreciate Internet's utility as well. Bulletin boards that are moderated (called "Listserv") enable individuals even continents apart to exchange information and insights on common themes. Records can be transferred instantaneously. Thanks to a uniform approach for users to address one another, Internet has evolved as the means for harvesting this bounty of information.

Various institutions — colleges and universities, libraries, federal and state agencies and the like — have established and maintained their own independent, subject-specific information networks. Many of these have been in existence for years. Depending on the network, there can be scores of topics available to the inquiring user.

"On almost all projects now I use the Internet to search for resources. ...There are a huge number of college students and scientists on the networks that ... are very friendly and will help you with any sort of question you'll have."

DANNY GOULD
Student, Montgomery Blair High School

Internet provides the access — the highway, if you will — to each and every one of these networks. The beauty of the concept is in its simplicity, that there are benefits for data providers and data users alike. For the institutions that establish their own networks, participation in Internet assures a wide-ranging clientele and widespread dissemination of their information. For the individual data user, Internet is the way to reach a global information database — a global information highway — via a single, central point.

NCES and Network Technology

SPEEDE/ExPRESS

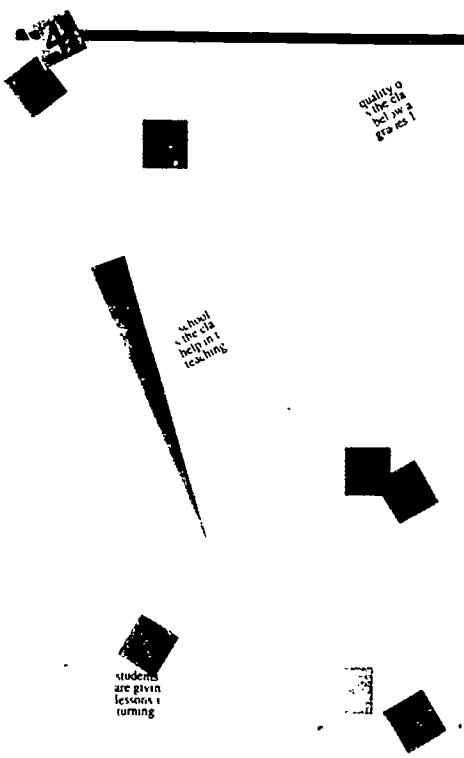
One of the ways in which the U.S. Department of Education's Network Center for Education Statistics (NCES) is taking advantage of network technology is with an electronic format for the transfer of student records called SPEEDE/ExPRESS [which stands for "Standardization of Postsecondary Education Electronic Data Exchange" and "Exchange of Permanent Records Electronically for Students and Schools"]. This format permits local school districts, state education agencies, community and junior colleges, and four-year colleges and universities to exchange data about students who transfer from, say, one jurisdiction to another or who are moving from one academic institution to another. These data contain certain essential information — the student's demographic characteristics, academic progress, participation in special programs and services, test performance, health status and the like.

"We figure it would cost about two dollars and 50 cents to produce a paper transcript. Here, in the state, it's less than one-twentieth of a cent using the [SPEEDE/ExPRESS] electronic formats."

BILL RUIZ
Director of Systems Engineering, University of Maryland System

Benefits come in the form of more timely placement of new students and moving them swiftly into the appropriate educational program. Resources — human as well as financial — are thereby freed to get on with the academic mission of the institution.

The development of SPEEDE/ExPress has been sponsored by the NCES. NCES continues to fund the project with the Council of Chief State School Officers and the American Association of Collegiate Registrars and Admissions Officers currently administering SPEEDE/ExPRESS activities.



FOR MORE INFORMATION

For more information about SPEEDE/ExPRESS, contact:

SPEEDE/ExPRESS Coordinator
The National Center for Education Statistics
555 New Jersey Avenue N.W.
Washington, DC 20208-5651
FAX: (202) 219-1728
Internet Access#: NCESINFO@INET.ED.GOV

INet: The Institutional Communications Network

Another of the ways in which the National Center for Education Statistics uses network technology is to furnish data it collects for posting and dissemination by the Institutional Communications Network. INet, as it is known, is a node established on Internet by the U.S. Department of Education's Office of Educational Research and Improvement. INet also renders a telecommunications service that allows for communication and information sharing with and among the major education research, development and dissemination institutions — known as RD&D institutions — that OERI supports. These include the National Research and Development Centers, Regional Educational Laboratories, Educational Resources Information Center (ERIC), the National Diffusion Network (NDN), Library Programs, and certain other OERI-funded activities. This arrangement assures the Internet audience access to NCES statistical data and OERI RD&D information.

"At NCES, we're committed to playing a leadership role in the federal statistical community in taking advantage of the Internet opportunities."

PAUL PLANCHON
Associate Commissioner,
NCES Elementary/Secondary Education Statistics Division

The INet system is being developed in several phases, after initially becoming available to the aforementioned OERI constituency, including OERI and NCES staff, in the spring of 1993.

OERI plans call for INet to be made more accessible to the public, via Internet, once the capacity of the system is significantly enhanced. With the infusion of NCES funding, it will be possible to make large segments of NCES data available online, including the data that go into major publications such as the *Digest of Education Statistics*, *The Condition of Education*, *Youth Indicators*, *Projections of Education Statistics*, and others. Information publicly available will also include a directory of Department of Education publications, a Directory of Current OERI-funded Projects, the ERIC Calendar of Education-Related Conferences and announcements about upcoming events, and also a Directory of Computer Data Files available from a library of over 25 years of NCES survey data. There will also be a collection of databases on research results (containing synopses of research results presented in non-technical language), programs and practices (identifying effective and promising programs as well as schools that have been recognized for their efforts), and sources of funding as well as other kinds of help.

There is now an Internet Gopher Server to provide the public with access to education research, statistics, and information about the U.S. Department of Education and its programs. Though still under construction, the OERI Gopher Server is an electronic pathway to much NCES data, material in the ERIC, the Regional Educational Laboratories, the National Diffusion Network, the Eisenhower National Clearinghouse for Math and Science, the Star Schools/Distance Learning Program, and Library Programs. The Gopher Server also includes a complete Department telephone directory in CSO Nameserver format, information about upcoming events and funding opportunities, and pointers to other OERI-funded Internet resources.

Over time, additional databases will become available online, to include the entire contents of most NCES publications and surveys as well as RD&D information. The National Center for Education Statistics will also move towards collecting survey data from its constituents using the INet and Internet, a development that will greatly improve the data's timeliness. Furthermore, INet will enable users not only to browse throu[redacted] INet resident infor-

mation, but to select from relevant databases developed and hosted by OERI-funded institutions.

As a result, schools, state and local education agencies, and for that matter, any individual engaged in educational research will have easy access to both statistical and research information. The National Data Resource Center, which NCES established for the purpose of facilitating education research of a statistical nature, already has the ability to field requests for data (including customized statistical analyses of data sets) through the INet and Internet (see the section about NDRC on pages 8-10 of this brochure for more details).

FOR MORE INFORMATION

For more information about INet, contact:

Catherine J.M. Mozer, INet Project Officer
Office of Educational Research and Improvement
Education Information Resources Division
555 New Jersey Avenue N.W. - Room 214b
Washington, DC 20208-5725
FAX: (202) 219-1817
Internet Access #: INETMGR@INET.ED.GOV

Related NCES Initiatives

The National Cooperative Education Statistics System

In the interest of fostering the spirit of cooperation in the collection and reporting of education statistics that had been steadily building between the states and the federal government, the U.S. Congress passed legislation in 1988 to establish the National Cooperative Education Statistics System.

The Cooperative System established a structure whereby the states and territories, federal agencies, and professional associations through their education representatives, work with the National Center for Education Statistics to determine what information is needed in order to be able to report on the condition and progress of elementary and secondary education in the nation. This Forum of representatives works to identify the data needed to help national, state, and local education policy and develop the systems to collect and report these data. Areas of mutual interest include enrollment counts, information about schools and school districts, their libraries and attendant resources, teaching and administrative staff, student achievement, and education finance.

Within the framework of the Cooperative System are several initiatives. The NCES Fellows Program brings state government, university, and school personnel to Washington, D.C., to learn about NCES data collections, statistical methodology and standards, how to use NCES data sets, and other special topics. Each Fellow is assigned an NCES staff member who serves as his or her individual mentor. There is no cost for the week-long program, and NCES reimburses Fellows' travel, lodging, and food expenses.

The Forum on Education Statistics meets twice a year to discuss education data policy and plan ways in which state and federal agencies can work cooperatively to lower the burden and increase the quality of information. The Forum has worked with NCES to sponsor consultant site visits to states, help assess the quality of their record systems, and plan improvements in record system automation.

FOR MORE INFORMATION

For more information about the National Cooperative Education Statistics System, its activities and operations, contact:

Lee Hoffman
National Center for Education Statistics
555 New Jersey Avenue N.W..
Washington, DC 20208-5651
FAX (202) 219-1728
Internet Access #: LHOFFMAN@INET.ED.GOV

The National Data Resource Center

Through the National Data Resource Center, administrators, teachers, researchers, policymakers — indeed, anyone — may gain access to virtually all data collected in the education studies and surveys that NCES maintains.

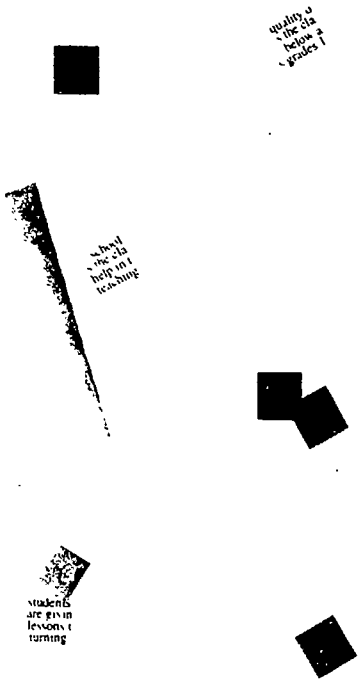
For now, there are 10 such databases. They are:

- Schools and Staffing Survey (*SASS*), an integrated sample survey of public and private schools, school districts, and principals and teachers;
- Private School Survey (*PSS*);
- Common Core of Data (*CCD*), providing basic data about

public school students and staff, as well as their schools and school districts, for all 50 states and the territories;

- High School and Beyond *(HS&B)*, a national longitudinal study to expand on the NLS and provide data on the educational and vocational choices made by students between their sophomore and senior years;
- National Longitudinal Study *(NLS)*, providing information about the transition of young adults from high school through postsecondary education and the workplace;
- National Education Longitudinal Study *(NELS:88)*, providing data on how school policies, teacher practices, and family involvement affect academic achievement, level of academic attainment and other educational outcomes;
- National Postsecondary Student Aid Study *(NPSAS)*, a nationwide study of how students and their families pay for postsecondary education;
- The National Survey of Postsecondary Faculty *(NSOPF)*, a survey of faculty in postsecondary institutions;
- Integrated Postsecondary Education Data System *(IPEDS)*, providing data about most postsecondary institutions — universities and colleges as well as vocational and technical institutions; and
- Recent College Graduates Study *(RCG)*, which yields information about the occupational educational outcomes of bachelor's and master's degree recipients who graduated from colleges and universities in the continental United States during the 1985-86 academic year.

One noteworthy feature of this service is that NDRC personnel will perform custom statistical analyses on data sets, providing the requester with tables and reports. Or, if it would be more convenient, the requester may come to the NDRC offices to perform his or her own statistical analyses. In either case, except



for standard on-line charges, there's *no cost* to the requesting party for this service.

You may direct a request to the NDRC using regular mail service, FAX, or the Internet. No matter how you choose to forward your request, please remember to include these key information elements: your name and title; the name of your organization; your telephone number, FAX number, or e-mail address; your organization's complete mailing address; the name of the data set from which you want information (e.g., NELS); the specific survey (e.g., NELS: Parent Questionnaire) and the specific variables you want analyzed; the population of interest (e.g., the public school teachers with 1 year of experience); the type of statistical analysis you want performed (e.g., cross-tabulations); and the medium you'd prefer for the final product to be delivered to you (e.g., diskette, hard copy).

NDRC uses the SAS (Statistical Analysis System) programming language to perform the actual analysis. A list of the available SAS tools can be found in any SAS manual. The normal turnaround time for NDRC to respond to a request is 4-6 working days, depending on the complexity of the request.

FOR MORE INFORMATION

For more information about the NDRC, contact:

National Center for Education Statistics
NDRC
555 New Jersey Avenue N.W.
Washington, DC 20208-5651
FAX: (202) 219-1728
Internet Access #: NDRC@INET.ED.GOV

Student and Staff Data Handbooks

Under contract to the National Center for Education Statistics, the Council of Chief State School Officers has been developing two data handbooks. One concerns student information; the other, school staff information. The handbooks feature descriptions of data element terms and definitions applicable to early childhood education as well as elementary and secondary education levels.

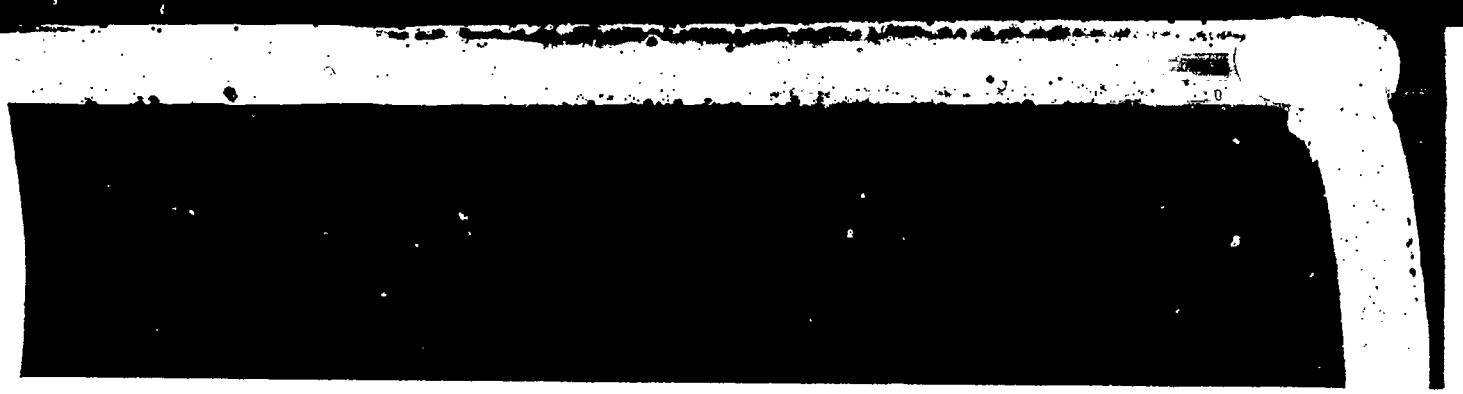
The Student Data Handbook gives standard definitions for any data element about pupils that might be needed for student records, school administration, or research and planning purposes. The data elements include background and demographic information, health and physical condition, enrollment, attendance, academic performance, and information about participation in special programs and eligibility for related services. Plans call for this handbook to be completed in August 1993.

The Staff Handbook covers certain aspects of the personal background of school staff members. These include levels of education and certification attained, their experience, how their positions could be classified, and the activities and programs to which they are assigned. Plans call for its completion by July 1994.

FOR MORE INFORMATION

For more information about the Student and Staff Data Handbooks, contact:

Barbara S. Clements, Director
Education Data System Implementation Project
Council of Chief State School Officers
One Massachusetts Avenue N.W. -Suite 700
Washington, DC 20001-1431
FAX: (202) 408-8072



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Course Classification System

For some time, education policymakers, researchers, administrators, and practitioners made it known that they needed a system to standardize the way our schools' courses and instructional programs are categorized and classified. Ideally, such a system would embrace all of the programs offered by all of the schools in the nation. It would facilitate communication among educational enterprises. A system such as this would offer a common methodology for researchers performing studies that involve student transcripts. Furthermore, it would help provide answers to questions about education at every level of involvement — national, state, and local.

That objective has been achieved.

In 1992, the National Center for Education Statistics invested in a project to bring such a system out of the conceptual stage and put it into practice. The first phase — now completed — produced a report that includes a proposed classification and course descriptions applicable to secondary education. A draft of the report has been distributed to state and local education agencies for comment. The final report should be available during the 1993-94 school year.

FOR MORE INFORMATION

For more information about the NCES Course Classification System, contact:

Course Classification System
National Center for Education Statistics
555 New Jersey Avenue N.W.
Washington, DC 20208-5651
FAX: (202) 219-172[redacted]
Internet Access #: NCESINFO@INET.ED.GOV

Miscellany

A single, free copy of the NCES-produced videotape, "Experience the Power: Network Technology for Education," may be obtained by writing to:

"Experience"
Rii
1010 Wayne Avenue, Suite 300
Silver Spring, MD 20910
Direct Phone: (301) 650-7494
FAX: (301) 587-4138
Attn: Robyn Krakow, Conference Planner

There are several books and journals available in the commercial marketplace that can provide information about Internet. One source of information about networks on Internet — along with general information about network technology — is a newsletter that has that as its subject. That newsletter, published by InterNIC Information Services, with funding from the National Science Foundation, can be ordered by contacting:

InterNIC Information Services
P.O. Box 85608
San Diego, CA 92186-9784
Direct Phone: (619) 455-3990
FAX: (619) 455-3990
Internet Access =: INFO@IS.INTERNIC.NET

The InterNIC group also offers a service for registering contact information for users on the Internet (called the "InterNIC Directory"). Interested parties may contact the InterNIC by phoning, toll free: 1-(800) 444-4345, and selecting Option 3 from the phone tree.


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